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(58) Field of search

(54) **First-aid adhesive bandage**

(57) A first-aid adhesive bandage comprises a bandage main body (1), a pad (3) affixed to the upper surface of the main body, and a container (4) enclosing a fluid medicinal agent disposed on the pad and having a bottom wall made of a thin sheet (7), the container being provided with a projection (10) extending downward from the central portion of its top wall (5) for rupturing the thin sheet (7) and allowing the medicinal agent to saturate the pad.



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FIG. 1

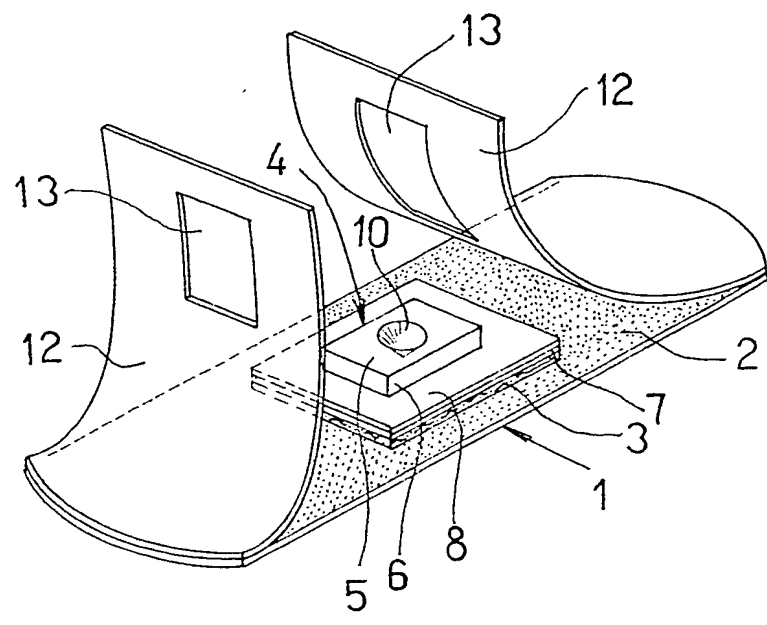


FIG. 2

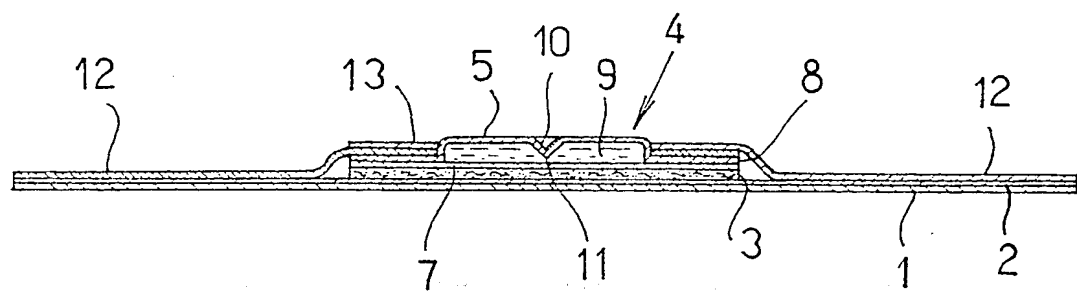


FIG. 3

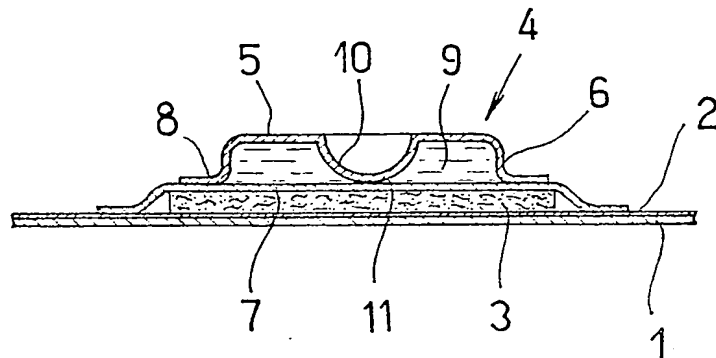


FIG. 4

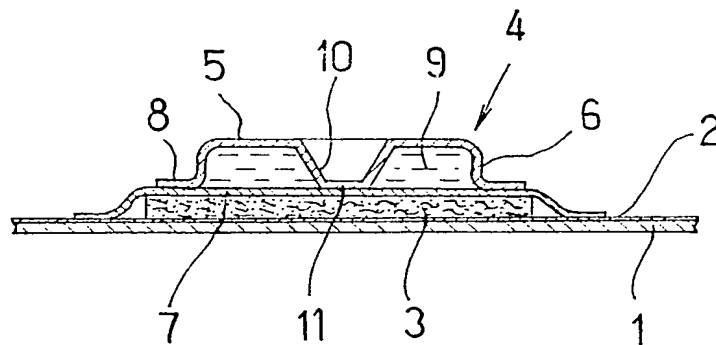


FIG. 5

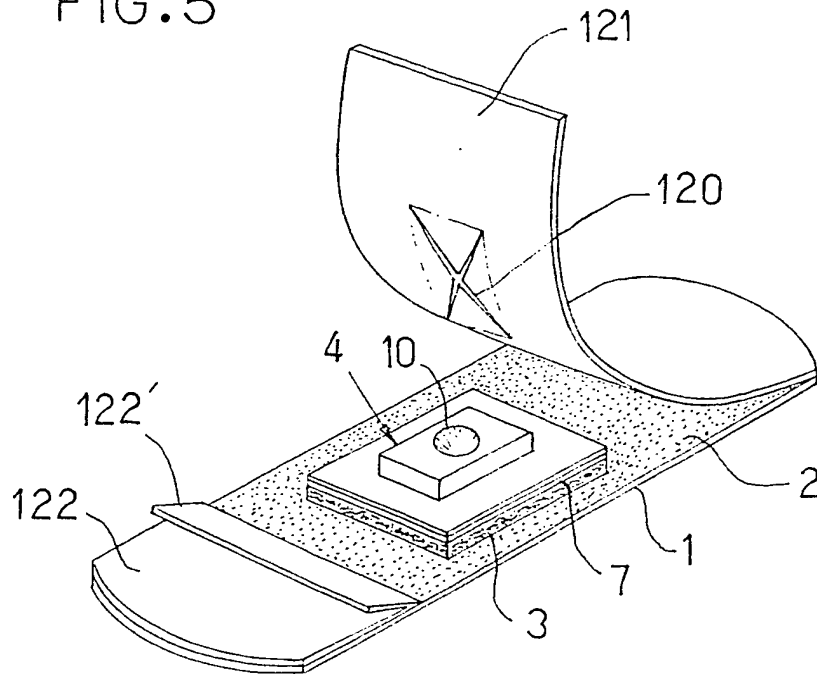


FIG. 6

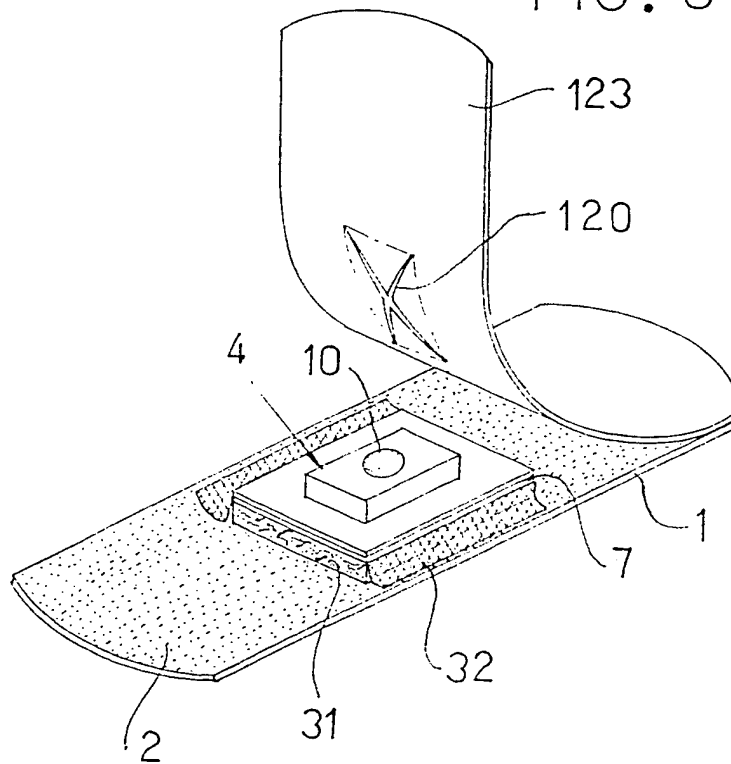


FIG. 7

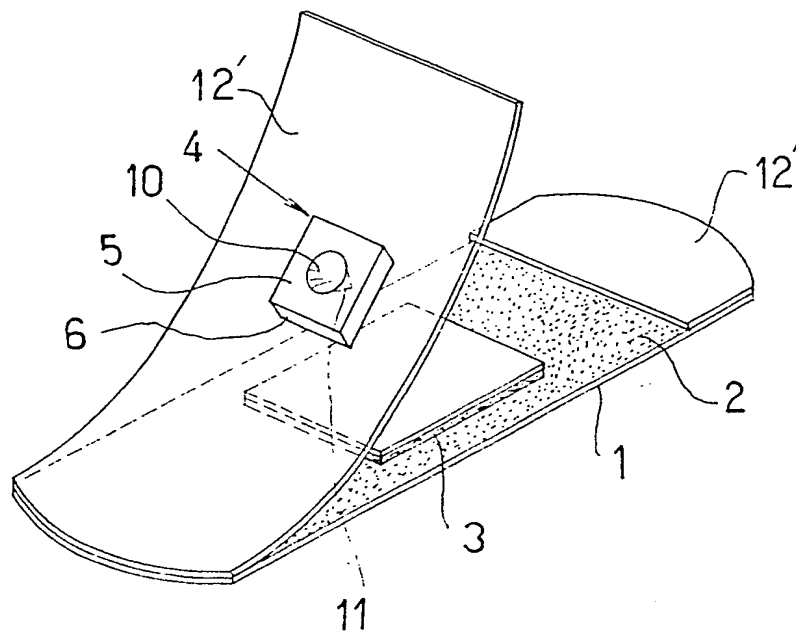
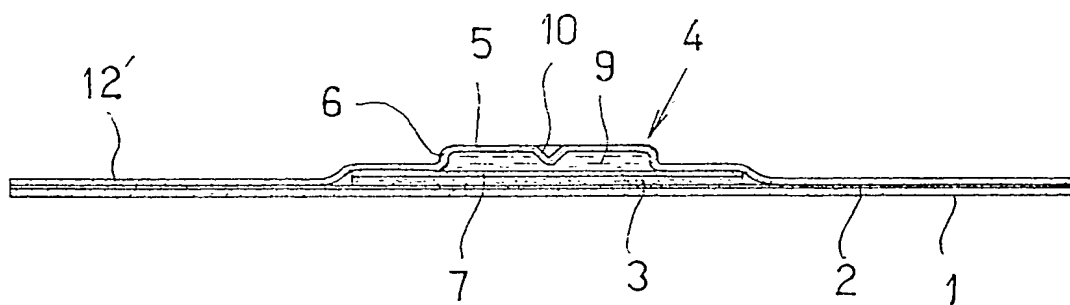


FIG. 8



SPECIFICATION

First-aid adhesive bandage

This invention relates to an improvement in first-aid adhesive bandages wherein a medicinal agent can be applied to or caused to impregnate a pad when required.

Various first-aid adhesive bandages have heretofore been provided. For example, adhesive bandages are in wide use which comprise a pad of gauze or the like affixed to the central portion of the adhesive bandage main body and dried after having been impregnated with a medicinal agent, and peel paper sheets affixed to the main body to cover the pad and separable therefrom when pulled away from each other. However, these bandages have drawbacks. Although the pad contains a medicinal agent, it is in a dry state, so that the pad is likely to injure the wound and also fails to produce a sterilizing antiseptic effect even when in contact with the wound unless the medicinal agent dissolves out from the pad into the fluid secreted from the wounded portion.

Accordingly first-aid adhesive bandages of another type have been proposed which comprise a capsule or blister provided on a pad and having a medicinal solution enclosed therein, such that when the capsule or blister is depressed from above for use, an aluminum foil or like thin sheet forming the bottom wall of the capsule or blister is ruptured by the pressure of medicinal solution to impregnate the pad with the solution. Nevertheless, when the capsule or blister is depressed to apply a pressure to the solution therein, the pressure of the solution ruptures the weakest portion of the thin sheet, i.e. an outer peripheral portion of the thin sheet where the lower edges of the peripheral wall of the capsule or blister is adhered to the thin sheet. Consequently, the solution is forced out through this portion over the adhesive surface of the bandage main body or off the surface, failing to properly impregnate the pad for use.

The main object of the present invention is to provide a first-aid adhesive bandage which comprises a pad affixed to the upper surface or adhesive surface of a bandage main body, and a container in the form of a capsule or blister and disposed on the pad, the container having a bottom wall made of a thin sheet, such as aluminum foil, and containing a medicinal agent enclosed therein, such that when the bandage is to be used, the thin sheet of the container can be ruptured to properly apply the medicinal agent to the pad or cause the agent to impregnate the pad.

The above object can be fulfilled by forming on the container a projection extending downward from the central portion of its top wall for rupturing the thin sheet and having a lower end in contact with or in proximity to the thin sheet.

The container can be in the form of a capsule.

In this case, the container may be held positioned on the pad by at least one peel sheet temporarily affixed to an adhesive coating of the bandage main body, or by being partially held by the adhesive.

When the container is held in position by the peel

sheet, the peel sheet is preferably formed with a container retaining aperture for the container to fit in or with a cut line for the container to fit into the sheet.

Alternatively the container may comprise a blister portion included in the peel sheet temporarily affixed to the adhesive coating of the bandage main body which portion is positioned above the pad, and the thin sheet covering the bottom opening of the blister portion.

The projection for rupturing the thin sheet can be molded from synthetic resin integrally with the container top wall.

Preferably the projection is in the form of an inverted cone or inverted pyramid having a sharp lower (forward) end or inverted frustum, or is semispherical, so as to concentrically act on the thin sheet.

The above and other object, features and advantages of the invention will become apparent from the following description of the invention with reference to the accompanying drawings which are given illustrative purposes only and to which the invention is not limited.

In these drawings:

Fig. 1 is a perspective view showing an embodiment of the invention with peel sheets stripped to some extent;

Fig. 2 is a sectional view showing the embodiment of Fig. 1;

Fig. 3 is a fragmentary view in section showing another embodiment;

Fig. 4 is a fragmentary view in section showing another embodiment;

Figs. 5, 6 and 7 are perspective views showing other embodiments each with a peel sheet stripped to some extent; and

Fig. 8 is a sectional view showing the embodiment of Fig. 7.

With reference to Figs. 1 and 2, an embodiment of the invention will be described. Indicated at 1 is an adhesive bandage main body in the form of a rectangular adhesive sheet which is prepared by applying an adhesive 2 to the upper surface of a woven or nonwoven fabric, plastics sheet or the like. A pad 3 of gauze, absorbent cotton, nonwoven fabric or the like is affixed to the central portion of the main body 1 on the upper surface thereof.

A container 4 in the form of a rectangular capsule or blister has a top wall 5 and a peripheral wall 6 which are made of a plastics film piece. The container 4 has at its lower end an opening which is closed with a thin sheet 7 of aluminum foil or glassine paper. The upper surface of the outer peripheral portion of the thin sheet 7 is affixed, with a suitable adhesive or by heat sealing, to the lower surface of a flange 8 made of the plastics film and extending horizontally outward from the lower end of the peripheral wall 6. The container 4 has enclosed therein a chemical solution such as a sterilizing antiseptic solution or a medicinal agent 9 such as analgesic, styptic agent, ointment or the like.

The container 4 is placed on the pad 3 with the thin sheet 7 superposed thereon.

The top wall 5 of the container 4 is formed at its center with a downwardly extending projection 10 in the form of an inverted cone, inverted pyramid or the like and having a V-shaped section. The

5 projection 10 has a sharp lower end 11 positioned close to the center of the upper surface of the thin sheet 7 serving as the bottom wall of the container 4.

A pair of peel sheets 12, 12 chiefly made of paper, 10 synthetic resin or the like is temporarily affixed to the surface of the adhesive coating 2 of the bandage main body 1 at its opposite sides. Rectangular retaining apertures 13, 13 for the container to fit in are formed in the center of the portions of the peel 15 sheets 12, 12 lapping over each other on the container 4. When overlapping each other, these sheets 12, 12 are in contact with the upper surface of the flange 8 of the container 4 to hold the capsule- or blister-like container 4 placed on the pad 3.

20 When the first-aid adhesive bandage thus constructed is to be used, the top of the container 4 is depressed to slightly bend the top wall 5 downward before or after the peel sheets 12, 12 are stripped off by being pulled away from each other, 25 whereby the projection 10 is brought into contact with the thin sheet 7 and ruptures the sheet 7 with its lower end 11 before the pressure on the medicinal agent 9 acts strongly on the sheet 7. The container top wall 5 in this state is further depressed 30 and deformed, forcing out the medicinal agent 9 from the container through the ruptured portion of the sheet 7, whereby the medicinal agent is caused to impregnate or applied to the central portion of the pad 3.

35 When the projection 10 in contact with the thin sheet 7 is depressed in this case, the pad 3 backing the thin sheet 7 is compressed by the pressure at its central portion, permitting the portion of the thin sheet 7 pressed on by the projection 10 to be 40 warped downward, with the result that a tensile force acts concentrically on this portion to easily rupture the sheet. Accordingly the lower end of the projection 10 need not always be sharp-pointed but can be circular arc, inverted trapezoidal or otherwise 45 shaped in section as in the embodiments shown in Figs. 3 and 4. When the lower end of the projection 10 is thus positioned in contact with or in proximity to the thin sheet 7, the thin sheet 7 can be immediately ruptured by the depression of the 50 projection 10. In the case of the embodiments of Figs. 3 and 4, the outer periphery of the thin sheet 7 is entirely or partially held to the main body 1 with the adhesive 2.

Like the embodiment of Fig. 1 or those shown in 55 Figs. 5 and 6 and to be described later, the embodiments of Figs. 3 and 4 include a peel sheet or peel sheets affixed to the bandage main body 1.

The embodiment of Fig. 5 has the same construction as the one shown in Figs. 1 and 2 60 except peel sheets 121, 122.

According to the embodiment of Fig. 5, one of opposite peel sheets 121, 122, i.e. the peel sheet 121, has a length sufficient to overlap the container 4 and a knob end portion 122' formed by folding back the 65 other peel sheet 122. The sheet 121 has a cross cut

120 for the container 4 to fit into the sheet 121.

The embodiment of Fig. 6 has the same construction as the one shown in Figs. 1 and 2 except a peel sheet 123 and its pad.

70 The pad of the embodiment of Fig. 6 comprises an absorbent material 31 such as absorbent cotton, gauze, nonwoven fabric or the like, and a thin flexible net 32 having resistance to chemicals such as a sterilizing antiseptic solution, analgesic agent, 75 styptic agent, ointment, and covering the material 31. The net 32 is held at its peripheral portion to the adhesive 2. The net 32 is made, for example, of polyethylene. The peel sheet 123 has approximately the same length and same width as 80 the adhesive bandage main body 1 and is formed with a cross cut 120 for the container 4 to fit into the sheet.

Although the container 4 in each of the foregoing 85 embodiments is in the form of a unusual capsule, Figs. 7 and 8 show another embodiment in which a peel sheet 12' has a blister portion positioned above the pad 3, having a bottom opening and providing the top wall and peripheral side wall of a container. A medicinal agent 9 is placed into the blister portion, 90 and the bottom opening is closed with a thin sheet 7 to obtain a container 4 having the agent 9 enclosed therein. A projection 10 extending downward from the center of the top wall of the container 4 has a lower end which is positioned in contact with or in 95 proximity to the upper surface of the thin sheet 7.

According to the embodiments described, the container 4 is merely depressed lightly from above, whereby the central portion of the thin sheet 7 can be readily and reliably ruptured by the lower end of 100 the projection 10, causing the medicinal agent 9 within the container 4 to properly spread from the central portion of the pad 3 toward the peripheral portion thereof for application or impregnation.

Further because the projection 10 has its lower 105 end positioned closed to or in contact with the thin sheet 7, the thin sheet 7 can be ruptured by the projection 10 before compressive pressure acts on the thin sheet 7 to rupture the same through the medicinal agent 9 within the container 4. 110 Consequently the medicinal agent 9, which is not subjected to a great compressive force when the sheet is ruptured, can be applied to or caused to impregnate the pad 3 gradually and smoothly without flowing out suddenly or scattering. This 115 assures very convenient use.

The foregoing is a description of preferred 120 embodiments of the invention, and it will be understood that various modifications may be made without departing from the spirit of the invention or the scope of the appended claims.

CLAIMS

1. A first-aid adhesive bandage comprising a bandage main body, a pad affixed to the upper 125 surface of the main body, and a container disposed on the pad and having a bottom wall made of a thin sheet and a medicinal agent enclosed therein, the container being provided with a projection extending downward from the central portion of its 130 top wall for rupturing the thin sheet, the projection

having a lower end in contact with or in proximity to the thin sheet.

2. A first-aid adhesive bandage as defined in claim 1 wherein the container is in the form of a capsule.

5 3. A first-aid adhesive bandage as defined in claim 2 wherein the container is held positioned on the pad by at least one peel sheet temporarily affixed to an adhesive coating of the bandage main body.

4. A first-aid adhesive bandage as defined in claim 10 3 wherein the peel sheet has a container retaining aperture for the container to fit it.

5. A first-aid adhesive bandage as defined in claim 3 wherein the peel sheet has a cut line for the container to fit in the peel sheet.

15 6. A first-aid adhesive bandage as defined in claim 2 wherein the container is held positioned on the pad by being partially retained by an adhesive coating of the bandage main body.

7. A first-aid adhesive bandage as defined in claim 20 1 wherein a peel sheet temporarily affixed to an adhesive coating of the bandage main body has a blister portion positioned above the pad and providing the top wall and peripheral wall of the container, and the blister portion has a bottom 25 opening covered with the one thin sheet and has the medicinal agent therein.

8. A first-aid adhesive bandage as defined in any one of claims 1 to 7 wherein the thin sheet rupturing projection is integral with the top wall of the 30 container.

9. A first-aid adhesive bandage as defined in any one of claims 1 to 8 wherein the projection is in the form of an inverted cone or pyramid.

10. A first-aid adhesive bandage as defined in any 35 one of claims 1 to 9 wherein the pad comprises an absorbent material affixed to the upper surface of the bandage main body, and a net covering the absorbent material and entirely or partially held at its outer periphery to an adhesive coating of the 40 bandage main body.

11. A first-aid adhesive bandage substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

45 Amendments to the claims have been filed, and have the following effect:—

New claims have been filed as follows:—

1. A first-aid adhesive bandage comprising a bandage main body having an adhesive coating on 50 its upper surface, a pad affixed to the upper surface of the main agent body, a container having a medicinal agent enclosed therein and at least one

peel sheet temporarily affixed to the adhesive coating of the main body and holding the container 55 in place on or over the pad, the container including a blister portion, a flange extending horizontally outward from the lower end of the blister portion, a bottom wall made of a thin sheet and closing the bottom opening of the blister portion, and a 60 projection extending downward from the central portion of the top wall of the container for rupturing the thin sheet by depressing the top wall, the blister portion having the medicinal agent accommodated therein, the projection having a lower end in contact 65 or in proximity to the thin sheet, the peel sheet having a container retaining aperture for the blister portion to fit in and become exposed on a side opposed to the pad.

2. A first-aid adhesive bandage as defined in claim 70 1, wherein the flange of the container is interposed between the pad and the outer periphery of the aperture.

3. A first-aid adhesive bandage as defined in claim 1 or 2 wherein the aperture of the peel sheet is 75 opened in conformity with the outline of the blister portion of the container.

4. A first-aid adhesive bandage as defined in claim 1 or 2, wherein in assembly of the bandage the aperture of the peel sheet becomes opened by 80 forcing the blister portion into cut lines in the peel sheet.

5. A first-aid adhesive bandage as defined in any one of claims 1 to 4, wherein the thin sheet rupturing projection is integral with the top wall of 85 the container.

6. A first-aid adhesive bandage as defined in any one of claims 1 to 5, wherein the projection is in the form of an inverted cone or pyramid.

7. A first-aid adhesive bandage as defined in any 90 one of claims 1 to 6 wherein the top wall of the container is substantially flat.

8. A first-aid adhesive bandage as defined in any one of claims 1 to 7, wherein the container has a rectangular shape.

9. A first-aid adhesive bandage as defined in any one of claims 1 to 8, wherein the pad comprises an absorbent material affixed to the upper surface of the bandage main body, and a net covering the absorbent material and entirely or partially held at 95 its outer periphery to the adhesive coating of the main body.

10. A first-aid adhesive bandage substantially as hereinbefore described with reference to the accompanying drawings.